The Province of Alberta

IN THE MATTER OF "THE NATURAL GAS UTILITIES ACT"

—and—

IN THE MATTER OF an Enquiry into Scheme to be adopted for Gathering, Processing and Transmission of Natural Gas in Turner Valley

---

G. M. BLACKSTOCK, Esq., K.C., *Chairman*

Dr. E. H. BOOMER, F.C.I.C., *Commissioner*

Session:

CALGARY, Alberta June 19th, 1945

VOLUME 27

I N D E X

VOLUME 27

June 19th, 1945.

Page

WITNESSES

E X H I B I T S

No.

: : : : : : :

Corrections

MEMORANDUM TO CORRECTIONS OF TRANSCRIPT

VOLUME 23, PAGES 1787 to 1856

EVIDENCE OF W. C. KIRKPATRICK

(Handed in by J. Ragnar Johnson)

PAGE	LINE	ERRATA
1825	25	"11¼ cent" should read "¼ cent"
1826	8	"non-revenue" should read "non-resident"
1828	26	"$42,319.35" should read "32,319.35"
18¾0	21	"Exhibit M-7a" should read "Exhibit M-7"
1841	10	"contaminating" should read "contaminated"
1848	10	"2,899,000" should read "2,899,994"

VOLUME 24, PAGES 1857 to 1934

1860	12	"2,899,944" should read "2,899,994"
	18	"2,899,944" should read "2,899,994"
1869	3	"processor" should read "predecessor"
1874	13	"pressure " should read "performed"
1887	Last Line	"return on" should read "return of"
1889	13	"Capital Operations" should read "initial operations"
1898	20	"Have no corporate" should read "have a corporate"

THE CHAIRMAN: Now what do you gentlemen want to go on with this morning?

MR. CHAMBERS: If the Board pleases I would like to clean up this month if possible the evidence of Mr. Kirkpatrick for reasons which I have already explained to you, Sir; Mr. Kirkpatrick will be leaving at the end of the month and he has prepared a considerable number of these statements and I see no reason why his evidence will not be completed this week and certainly next week. I noticed in the Board's letter that we would consider this morning how much time we were going to sit this week. The only reason I am urging it is to make sure I can finish with Mr. Kirkpatrick. I can finish with the direct-examination probably this morning and half of tomorrow.

THE CHAIRMAN: In my letters to you, gentlemen, I intimated that the Board would probably sit until and including Friday. That cannot be done. Dr. Boomer has to be in Edmonton on Friday so that we will sit today, tomorrow and Thursday and we will adjourn until Tuesday of next week. So far as I am concerned I would be prepared to sit until Friday of next week but I know that Mr. Steer, who is the president of the Law Society, has the semi-annual convocation of the Benchers next Friday and obviously he cannot be here. Therefore it appears that we will have three days this week and three days next week.

MR. CHAMBERS: It is not convenient to sit on Monday of next week?

THE CHAIRMAN: No, I have other things to do.

MR. CHAMBERS: Well I would think that, subject to what other Counsel may want to do in cross-examination, that six days would certainly clean up all of Mr. Kirpatrick's statements.

MR. FENERTY: If the time is necessary, there is no possibility of it being Monday, Tuesday and Wednesday of next week. We have the Benchers on Friday and the Court closes that week. Some of us might like a day or so between that meeting and the end of the term to arrange some office affairs.

THE CHAIRMAN: Well up until now, Mr. Fenerty, I think the Board has tried to accommodate Counsel as much as it possibly could.

MR. FENERTY: Oh yes.

THE CHAIRMAN: I cannot be here next Monday.

MR. FENERTY: Very well, Sir.

THE CHAIRMAN: Dr. Boomer cannot be here on Friday so I am afraid that it will be Tuesday, Wednesday and Thursday of this week and next.

Now, Mr. Steer had not finished his cross-examination of Mr. Kirkpatrick on one of the statements, I do not remember which one.

MR. CHAMBERS: M7 I think.

MR. STEER: M7.

THE CHAIRMAN: What do you want to do about that, Mr. Steer, do you want to finish it before going on with these others?

MR. STEER: I would rather do it all at once, Sir, subject to your approval.

THE CHAIRMAN: Does that suit the rest of you. I am thinking of the convenience of the transcript when we are dealing with M7 or M5, whatever it is, that you have it all in one place.

MR. CHAMBERS: Well they are more or less related. M7 deals with the capital additions which have been made and which are to be made and M9, and what we are going to use today, our operating costs and annual depreciations.

THE COMMISSIONER: What is your position, Mr. Harvie you had a witness that you had in mind who would be required and whose evidence you wished to put in.

MR. HARVIE: Well as a result of the doubt as to when the Board would be sitting I intimated to him, Mr. Chairman, and I have notified our witnesses that we cannot set any day for them to be here and we would just notify them when they would be required. As far as Mr. Domelan is concerned his evidence will take sometime and I do not think there is any chance of completing it before the holidays and I have intimated to him that possibly it would be more convenient to call him after the holidays but that I would notify him as to the time when he would be required.

Mr. Teis was supposed to have been here yesterday but we have advised him in view of the other arrangements, that he just hold himself in readiness and so far as I am concenred it will go on next Fall or at any other time if we could give him a week's notice and he could make his arrangements,

THE CHAIRMAN: So when we are finished with Mr. Kirkpatrick, if we finish by next week, you will go on with Mr. Stevens-Guille at the point where we left off.

MR. CHAMBERS: Yes.

There is just one other thing, we have not reached anything on the sharing position and I think it would be inadvisable to start that unless we could be sure of completing it, because it is pretty complicated and if we did half of it in June and half later on that might not be very satisfactory. Mr. Stevens-Guille has certain evidence which he was giving and Mr. Steer had not cross-examined, you will recall, so that I would

think these two witnesses would take most of this week and next week, that is subject to the usual line of cross-examination.

THE CHAIRMAN: All right then, we will start with Mr. Kirkpatrick.

MR. W. C. KIRKPATRICK HAVING BEEN RECALLED Direct-examination continued by Mr. Chambers.

MR. CHAMBERS: As a recapitulation to make a new starting point I would just like to review briefly the last two or three exhibits put in.

Exhibits 59 and 60, known as M6 and 6A, they were prepared and filed by Mr. Hill and they appraised and valued the plant and equipment which was formerly constructed by Royalite and which was transferred by Royalite to Madison and they also dealt with working capital, that is Exhibit 59 and 60.

Then there was Exhibit 74, which is otherwise known as M7; that was prepared and filed by Mr.Kirkpatrick, you will recall, and that Exhibit 74 dealt first of all with the actual and estimated capital additions from 1945 to 1948, that is, they were actual for 1944 and estimated 1945 to 1948. That Exhibit 74 also dealt with materials and supplies and it dealt with the cash workingcapital.

And then we have Exhibit 77, which was M8, which was prepared and filed by Mr. Stevens-Guille, which dealt with the 1944 construction from the standpoint of the engineer who was in the field and who knew what was going on and he also dealt with the estimated future capital additions which would be required from 1945 to 1948. He also verified the materials and supplies and then he gave a long description of the system-

THE CHAIRMAN: The pipeline system?

MR. CHAMBERS: Of Madison.

THE CHAIRMAN: And we had not finished with that.

MR. CHAMBERS: Not finished with the cross-examination. We had finished the examination in chief.

THE CHAIRMAN: That is right.

MR. CHAMBERS: So those exhibits dealt with more or less what we might call the "Rate base evidence".

Now Mr. Fonerty, in volume 25 of pages 2015 and 2016 on the 18th of April asked for certain information relative to Exhibit 76, which was Royalite is balance sheet or rather Madison's balance sheet for the year ending December 31st 1944 and I have asked Mr. Kirkpatrick to prepare that and I am going to now file as an Exhibit all these documents so that the other parties will have them.

Q MR. CHAMBERS: You have prepared, Mr. Kirkpatrick, certain information in response to that request of Mr. Fenerty's?

A Yes.

Q By the way you are still under oath?

A Yes.

Q Now have you copies of those?

(Document produced by Witness)

DOCUMENT PRODUCED HERE
MARKED AS EXHIBIT 78.

Q MR. CHAMBERS: Just explain briefly what it is and we will come back to it. Probably we could just leave that for the moment and Mr. Kirkpatrick will deal with it in due course in his evidence. Will that be agreeable, Mr. Fenerty?

MR. FENERTY: Yes.

Q MR. CHAMBERS: Now then, Mr. Kirkpatrick, there has also been filed with the Board for distribution reports M10, M9,

M12, M13 and M14; would you just in a word tell us what each one of those is before we file them?

A Well M9 is our estimate of the total costs including depreciation and return on capital employed for the years 1944 to 1948 inclusive.

Q That is M9?

A Yes.

Q M10?

A M10 is a submission setting forth our views on the method of computing depreciation and the resulting rates.

Q That is for the future?

A That is the future depreciation.

M12 is our estimate of costs of the wet gas gathering and wet gas compressing facilities and incidentally extended from M9.

M13 is our estimate of the scrubbing costs for the years 1944 to 1948 inclusive, also having as its source report M9.

And M14 is the estimated costs of transmission and compression of the residue gas which originates in the Gas and Oil Products Plant; also for the five year priod 1944 to 1948 and this latter submission also originates from M9.

MR. CHAMBERS: I tender these as exhibits.

THE CHAIRMAN: M9 will be Exhitib 79.

SUBMISSION M9 PRODUCED AND MARKED AS EXHIBIT 79

THE CHAIRMAN: M10 will be exhibit 80.

SUBMISSION M10 PROLUCED AND MARKED AS EXHIBIT 80.

THE CHAIRMAN: M12 will be exhibit 81.

SUBMISSION M12 PRODUCED AND MARKED AS EXHIBIT 81.

THE CHAIRMAN: M13 will be exhibit 82.

SUBMISSION M13 PRODUCED AND MARKED AS EXHIBIT 82.

THE CHAIRMAN: M14 will be Exhibit 83.

SUBMISSION M14 PRODUCED AND MARKED AS EXHIBIT 83.

(Go to page 2049)

Q I understand that you would prefer to deal with Exhibit 80 first?

A I would suggest that we proceed with that first because it is rather out of order there. M 9 - 12 - 13 - 14 are really a related set of statements. M 10 is more to set forth a principle which we have applied.

Q Will you proceed to deal with Exhibit 80 and carry on with the other Exhibits, reading and explaining them as you go along.

THE CHAIRMAN: Another thing I omitted to mention this morning is, what about the hours, 9.30 to 1. Will that be enough for you for one day or do you want more time?

MR. CHAMBERS: So far as I am concerned my material is ready and it does not make much difference to me what the hours are.

MR. STEER: I find it a rather satisfactory way of working. I think you do not gain a great deal by having two sittings.

MR. HARVIE: I think with the morning sitting we will accomplish as much.

WITNESS: I would just like to state at the outset that this report on Page 1 is entitled: Depreciation Method of Computing and Rate Thereof, and I should have said that this was set forth to cover future depreciation since the inception of Madison rather than anything to do with the past depreciation.

1. One of the matters to be heard before the Natural Gas Utilities Board at the Natural Gas Rate Hearing opening March 12th, 1945, is the matter of depreciation including the method of computation and rate thereof. The purpose of

this report is to outline Madison's views on this matter and to explain in some detail the methods used by Madison in compiling the estimated amounts and rates of depreciation as set forth on the "D" Group of schedules of Madison's Report M-9 for the years 1944 to 1948 inclusive.

2. It is considered that the unit method of depreciation is the most practicable and accurate method of measuring the annual proportion of the total cost of physical capital assets that has expired or that has been utilized in Madison's natural gas operations in each fiscal period. The unit method of depreciation is, fundamentally, a procedure by which the total amount of depreciation for each fiscal period is measured in the proportion that each year's volume of natural gas handled bears to the estimated total volume of gas to be handled. In other words, each thousand cubic feet of gas handled bears a fixed and predetermined amount of depreciation varied only where additions to the fixed capital assets are made in subsequent periods or where the estimated total reserves of natural gas are adjusted upwards or downwards in the light of future experience and additional technical data.

I would just like to mention at that point that there has been some thought given to the possibility that future capital additions might be incurred in the depreciable rate base now rather than as of the date at which these additions occur and our thought on that is that there are some objections to it. In the first place it appears to us that under that procedure today's consumers would be paying for future additions, say ten or fifteen years hence. The second objection would be that it might be rather

difficult to forecast the more important capital additions that are likely to arise beyond say the five year period we are looking at now.

The third point that strikes us is that in our submission M-7 we forecast some $748,183.00 of future capital additions for the five year period ending 1948 of which the sum of approximately $359,000. were actually expended in 1944 leaving the sum of $388,000.00 or $389.000.00 for the next four years and taking the $389.000.00 at an assumed rate of four percent per annum which happens to be close to the rate used by us in 1944 the depreciation amount would be approximately $15,500.00 a year. Now spreading that over the throughput or should I say for 1944 which is roughly fifteen million c.f. gas an arithmetical result of one tenth of a cent per m.c.f. which is too small an influence on the final gas determination to offset other factors which might have been or will be estimated in the future in determining the final rate for m.c.f. for gas to the market.

3. The objective to be sought by the use of the unit method of depreciation is to charge each year's profit and loss with an amount of depreciation in proportion of the total gas reserves utilized during the same period so that the total depreciation reserve will equal the original cost of the assets being depreciated at the time and at the point where the last thousand cubic feet of gas has been utilized.

4. The principal advantage of the unit method of depreciation over the straight-line method lies in the fact that the annual total amount of depreciation is related directly to the percentage of total natural gas reserves which have been handled in each period by the gas system. The weakness

in the straight-line method is that each year's operations would be charged with a fixed total amount of depreciation regardless of whether the total gas volume (and related dollar sales of gross income) increases or decreases substantially from period to period. It is therefore considered that the unit method of depreciation is the most desirable formula to be applied in determining the annual amount of depreciation on assets which are related to and identified with a wasting asset as is the case in the matter to be heard.

It is probably pertinent to point out here that the straight line method of depreciation and the unit method of depreciation are essentially the same. They are both subdivisions of the direct proportion methods of depreciation as I understand them. The difference being that the unit method of production is geared to the service out-put or some other unit so that there is a definite relationship between volumes handled and there is a definite relationship to the gross income of the Company.

5. This brings us to a consideration of the mathematical basis on which this unit depreciation should be computed, and it seems to us that two methods are open to consideration.

METHOD "A" - A division of Madison's total fixed assets into main operating functions subject to unit depreciation according to the reserves of natural gas related to each main function,

METHOD "B" - The application of the total field connected reserves to the total fixed assets without regard to the individual operating functions and related reserves of each group of assets.

6. Method "A" involves somewhat complicated calculations from year to year as the related natural gas reserves are adjusted upwards or downwards in the light of future experience and technical information, whereas Method "B" involves only one over-all blanket adjustment as total field reserves are adjusted upwards or downwards from time to time.

Now I said there an over-all blanket adjustment under the proposed method of applying unit depreciation, actually there is no adjustment of past operation, but any increase or decrease in the estimated total reserves has an influence only on the depreciation from the date that reserves are adjusted upwards or downwards. It has no retroactive factors. That is the remaining net capital investment in assets at the date when the rate is changed is divided into or the adjusted reserves are divided into the net remaining investment.

DISCUSSION OF METHOD "A"

7. Under Method "A", Madison's total investment in physical capital assets would have to be broken down into the following main classifications according to function:

1. Wet Gas Gathering Systems (Feeding Royalite's Gasoline Plant)
   a. High pressure wet gas gathering lines - North
   b. High pressure wet gas gathering lines - South
   c. Low pressure wet gas gathering lines - South
   d. Compressor Plant No. 1
   e. Compressor Plant No. 3 (Wet Gas Compression)
2. Residue Gas Gathering System (G.O.P. Gas).
   a. Suction line from G.O.P. Plant to Compressor No.3.
   b. Discharge line from Compressor No. 3 to B.A. residue line at Hartell junction.

c. Compressor Station No. 3 (Residue gas compression).

It will be noted that Compressor Station No. 3 appears in both Items 1 and 2, and the reason for that of course is that part of the compressor equipment for that station is devoted to wet gas gathering while part of it is devoted to dry gas gathering.

3. Purification System.

a. Girbotol Scrubbing Plant

b. Seaboard Scrubbing Plant.

4. Service Plants.

a. Boiler Plant

b. Power Plant

c. Water Station

5. Repressuring System

6. Miscellaneous

a. Warehouse

b. Transportation Equipment

c. Office Equipment

8. Under Method "A", the assets grouped under Items 1, 2 and 3 above would be considered as subject to depreciation in respect of the total related volume of wet and dry gas estimated to be handled by each of these separate systems during the service life of each system.

9. Thus the wet gas gathering system in Item 1, as it presently exists or as it may be expanded in future years, would be subject to depreciation on the basis of the total wet gas north and south now connected or to be connected to the present and future wet gas gathering system.

I N D E X

VOLUME 27

June 19th, 1945. Page

WITNESSES

W. C. Kirkpatrick

E X H I B I T S

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I should, perhaps, have elaborated on that a little further. What I intended to say there was that the wet gas gathering system north would have to be related to the total wet gas in that area of the Valley. And similarly the South low and the South high. And similarly the volume of gas which it is estimated will be handled through the Number 3 compressing station would require to be divided for that purpose into dry gas and wet gas.

The assets grouped under Item 2 above would be subject to depreciation on the basis of the volume of estimated dry gas to be gathered from the G.O.P. Gasoline Plant having in mind that this system might operate for a lesser number of years than the total estimated life of the Turner Valley gas field as a whole. In this case, we would be confronted with the necessity of predetermining the estimated physical salvage value of this investment at the time it might be relocated and reassigned, say to wet gas gathering service. In this connection it will be observed that the Compressor Plant No. 3 is, in part, related to the function of wet gas gathering and is, in part, related to the function of residue gas gathering.

That is the observation I made previously. I would like to say at this point that a large amount of the equipment laid at the No. 3 Compressor Plant is common to the function of compressing wet gas and dry gas. For example, the compressor plant buildings, the lighting system, water cooling storage tanks, fire equipment and sundry investments of that kind. I do not have any actual figures on how much is invested in this common type of equipment, or equipment which is common to operations, but it is very substantial. Thus it would be seen that it is difficult to say how much

of this equipment goes towards the function of compressing dry gas and how much to the function of compressing wet gas.

The Purification System grouped under Item 3 above would have to be depreciated on the basis of the estimated total volume of gas to be scrubbed over the life of the gas field. In the case of this Purification System, it should be borne in mind that the estimated volume of gas to be scrubbed will originate from three sources; namely, Royalite Gasoline Plant, Gas and Oil Products Gasoline Plant and from the British American Gasoline Plant (delivered through British American's own lines to the scrubbing plant).

In connection with the scrubbing plant I think it might be opportune to point out that it seems to me that quite apart from the fact that the gas to be scrubbed through the Purification System will originate from three main sources, it will be difficult to determine in advance with any reasonable accuracy, or determine how much of the gas would be handled by each of these three systems, although the combined total to be scrubbed should be fairly easy to determine. In other words, if we were to attempt to determine, attempt to depreciate the three Purification Systems, on the total gas to be scrubbed through each, I believe it would be a highly arbitrary calculation, as the volume passing through each system is governed by operating and technical circumstances in some measure as they arise from day to day. As time went on the volume handled by each plant would be disproportionate with the amount originally estimated, requiring adjustment in calculation at some future period.

The Service Plants grouped under Item 4 above are used for the purpose of generating steam and electricity and pumping water both for internal (Medison)

purposes and for external (Royalite and Valley Pipe Line) purposes, and the functions, I should have said internal functions, of these service plants are related, in part, to the operations of the Compressor Plant No. 1 (wet gas gathering) and to the Purification System (Residue gas basis).

The repressuring system included in Item 5 above, it is estimated,will be used for the storage in formation of residue gas for a period of approximately 13 years. That period may have to be subsequently changed. I have not checked that, but it is here for the purposes of the illustration. It does not matter for the purposes of this discussion whether it is ten or fifteen years. After that time it is possible that the repressuring equipment proper (high pressure cylinders and high pressure storage line) could be utilized in other operations of the total system.

Under miscellaneous in Item 6 above have been included items of a sundry character utilized in part by all operations of Madison. The building comprising the warehouse and warehouse office will likely be utilized for the entire estimated life of the gas field, and would hence be depreciated on the basis of the estimated total volume of gas to be handled by the system. The assets identified as transportation equipment and office equipment are estimated to have a physical or service life less than the life of the gas operation as a whole for which reason the depreciation relative to these assets must of necessity be computed on a straight-line basis. For this purpose, it is suggested that transportation equipment, exclusive of the fire truck, be depreciated at the rate of 25% for the first year, 20% for the second year, 20% for the third year, 20% for the fourth year, with an estimated 15% salvage at the termination of the fourth year. A suggested

rate applicable to the fire truck is a straight 5% per annum as this unit is not subject to excessive wear and tear. Office equipment, we believe, should be divided between office machines with a rate of 10% per annum and office furniture at a rate of 5% per annum.

Under Method "A" herein discussed or under Method "B", a discussion of which follows, it is our suggestion that no consideration be given at the present time to provision for estimated salvage at the termination of the life of the field, other than salvage in respect of transportation equipment. Our reason for so suggesting that salvage be ignored is based on the fact that the estimated life of the gas field is approximately thirty years, and at the expiration of this period, it is questionable whether the plant located above ground, as a whole, will have other than a junk value, which junk value can very well amount to less than the actual cost of dismantling and removing. In the event that the actual cost of dismantling and removing the plant above ground exceed the junk value of the equipment so salvaged, we would then have what might be termed "a negative salvage value." Certainly in the case of pipe lines, which are on the average buried to a depth of some five to five and one-half feet, it may be assumed that at the expiration of thelife of the field the cost of removing the pipe, cleaning and preparing for sale, would exceed the salvage value therefrom. It should also be borne in mind that if a percentage of gross cost for salvage purposes were to be established, consideration should first be given to a deletion from the total installed cost of all intangible costs such as ditching, back-filling, welding, transportation, supervision, etc. as the intangible costs cannot, of course, be recovered. In other words, if

of the estimated total cost of the capital assets, 50% is intangible cost, a 5% over-all salvage rate would actually amount to a 10% rate on the gross cost. The 1944 costs of pipe line construction indicate that the tangible and intangible costs are in the approximate vicinity of 50% respectively.

In the case of compressor equipment, it is possible that a competent engineering estimate of resale value of this type of equipment may be determined at this time, but such salvage value would necessarily have to be related to the alternative use to be found for such equipment, say thirty years hence, and the possibility that the costs of preparing for shipment and freight thereon to a new location, perhaps remotely located from Turner Valley, would nullify such salvage or resale value. In the case of scrubbing equipment, salvage or resale value could only be established in the event of a known adjacent gas field producing natural gas requiring a purification process was available. Obsolescence is another important factor operating against the possibility of any substantial salvage or resale value for present compressor and scrubbing equipment in an alternative service. Thirty years from now engineering development of this type of equipment may cause Madison's equipment may cause Madison's equipment to be of no value to others. We suggest, therefore, that at this time the salvage value thirty years hence of the present equipment installed and future equipment to be installed is a matter of difficult calculation. Towards the latter part of the life of the Turner Valley gas field, a definite salvage or resale value of physical plant may be seen. At that time, adjustments could then be made in the depreciation calculations from that date onwards to provide for this recovery.

Now, these remarks on salvage are

entirely my own responsibility. There is no engineering opinion included in that, and since Mr. Hill appeared before this Board under cross-examination, he gave his opinion that while what we had set forth here is probably true, it is difficult to determine salvage on this equipment so far into the future. It is my recollection that he has indicated that he would raise no objection to the setting of the salvage rate, I think at 5% net. While it is still my belief that the 5% might be too high or too low, I am certainly neither competent nor prepared to differ with Mr. Hill's view, should it be decided to establish the salvage value at 5% over-all with respect to the specific equipment such as the pipe lines, buildings and so on, the accounting records and the cost statements can, of course, be set up accordingly. The matter of the 5% salvage factor on the operating costs which will be dealt with later this morning, is not important enough to warrant us recalculating at this time of this hearing the cost statements already produced in evidence. For example, assuming the total over-all salvage amount of $1,000,000.00, and that is assumed by taking two million, being theplant and 5% net salvage.

Q MR. CHAMBERS: You mean $100,000.00?

A I meant to say $100,000.00. The fact or the effect of the 4% depreciation rate on a 1944 cost would be some $4000.00 which is a relatively small amount compared with the total operating cost.

It appears to us that Method "A", hereinbefore discussed, has several disadvantages. The first is that each group of assets is subject to depreciation on separate gas reserve bases, which individual reserves may very well be adjusted upwards or downwards substantially from

time to time as developments in operating conditions or additional technical data and experience are available.Thus the break-up of the total fixed capital assets into smaller groups and depreciation comput tions relative thereto on seperate reserve bases would create complications in accounting for each piece of equipment in future years when assets are transferred from one reserve group to another reserve group. For example, the residue gas gathering line and residue gas compressor presently utilized in transporting Gas and Oil Products gas may, at the termination of say twelve to fifteen years, be dismantled and relocated in some other part of the field where the related gas reserves have been withdrawn at a greater or lesser rate than the rate used in the Gas and Oil Products area.

(Go to Page 2062.).

Again the aforesaid residue gas gathering and compression system may, by extension thereto become related to an entirely new set of natural gas reserves, thereby creating accounting complications in adjusting the depreciation to the new reserves related to the said system. Another illustration of the complications which would arise in relating individual pieces of equipment to specific separate gas reserves can be given in the instance of the North Wet Gas Gathering Pipe Lines which extend some ten miles in a northwesterly direction from Madison's No. 1 Main Compressor Plant, This pipe line at the present time serves areas which might, by engineering calculation, be broken down into two or more natural gas reserve groups. The northerly extension of the gas gathering line would thus be directly related to the reserves in that area only, while the central and southerly sections of the line would be related to the natural gas reserves in the north extension area plus reserves in the immediate areas serviced by the central and southern portions of the line. From time to time, it might be necessary to loop parts of the existing system or to expand the present northern limits of this line and to identify parts of this gas gathering system with specific individual areas of gas reserves which would lead in time to extremely complicated and impracticable depreciation calculations.

Frankly, I do not know how one should work that out and while I am not personally familiar with the depreciation accounting policy followed by the Calgary Gas Company in amortizing or depreciating its distributing pipe line system in the city, I feel fairly safe in saying that it is hardly likely that the Company depreciates its investment in distribution facilities here

on the basis of dividing its total city investment into areas or sections and estimating the volume of gas to be delivered through its various sectional pipe line facilities. It appears to me that it would be just as proper to expect such a depreciation accounting formula to be applied to the Gas Company's distribution investment as it would be to apply the same relative policy to Madison's investment in various areas in the Turner Valley field.

DISCUSSION OF METHOD "B"

18. Under Method "B" above, a general over-all formula suggested for the determination of the annual amount of depreciation is to apply to all assets grouped under Items 1, 2, 3, 4 and 5 above a rate equal to the percentage that each year's sales of scrubbed gas bears to the total estimated sales of scrubbed gas over the life of the field. For example, if it is estimated that the total sales of scrubbed gas to the domestic and industrial market, regardless of the number of years involved, will amount to say 350,000,000 m.c.f. of gas, and if the 1944 sales of scrubbed gas amount to say 15,000,000 m.c.f., then the depreciation rate applicable for that year will be 15/350ths or 4.29% of the total amount of funds invested in physical assets at the beginning of the year, plus one-half of the capital additions during the year. The assets grouped under Item 6 above would, of course, be depreciated on the straight-line method more fully explained in Paragraph 14 above.

19. Method "B" would thus apply to each thousand cubic feet of gas sold by Madison a proportion of the total depreciation computed each year in the gathering, compressing, purifying and storing of gas for present and future markets on the principle that all of Madison's fixed capital assets

are dedicated to the fundamental work of gathering and scrubbing and preparing for market residue natural gas for sale to Calgary and other domestic and industrial fuel markets. This formula is much simpler in its accounting aspects because of the fact that the rate of depreciation per thousand cubic feet of gas sold can be readily computed using the total field connected marketable reserves to be determined at this Hearing, and until such time as the total reserves are subsequently revised upward or downward to any material extent, the annual depreciation rate per m.c.f. remains constant, subject to slight changes caused by additional capital expenditures. A further advantage of the application of this formula is that individual pieces of equipment, such as lines, compressors, etc., may be transferred from one operation or service to another operation or service as circumstances make necessary without creating a complicated accounting calculation as to the depreciation sustained by such equipment in its previous service and revised calculation to determine the depreciation applicable for the duration of its service or operation in its new location.

20. As a precedent for the recognition of Method "B", reference is made to the case of Valley Pipe Line Company Limited. That Company has a somewhat similar problem in that it operates oil gathering lines in various parts of the field, maintains a central tank farm system in mid-Turner Valley and operates crude oil and natural gasoline transmission pipe lines to refineries located in the vicinity of the City of Calgary. The annual amount of depreciation sustained on the total assets utilized by the Valley Pipe Line Company Limited is computed on the total Turner Valley

oil reserves.

21.. We believe that the application of Method "B" hereinbefore described is the most practicable approach to this problem and, in the end, will achieve the same result as the application of Method "A"; namely, the retirement over the entire life of the natural gas field of the total investment in physical assets, and offers a much less complicated and less costly method of depreciation accounting than Method "A".

Q MR. CHAMBERS: Would you just go back to paragraph 20, where you referred to the Turner Valley Pipe line and you say in the concluding words "It is computed on the total Turner Valley oil reserves." That should be marketable oil reserves?

A I intended to imply that, Mr. Chambers, yes. In paragraph 21 I notice I have said that this offers a less costly method of depreciation accounting. I did not mean that it offers a less costly method in respect of the influence on depreciation and the cost of residue gas but rather in respect to the accounting and perhaps engineering costs which would be involved in the more complicated method.

22. Madison has therefore in its submission relative to depreciation as contained in its Report M-9 applied rates of unit depreciation in the years 1944 to 1948 on the basis of a percentage determined by a division of each year's estimated scrubbed gas sales into the total estimated scrubbed gas sales as set forth in the following table:

Year	Estimated Marketable Reserves as of Jan. 1st. (m.c.f.)	Estimated Annual Reserves Marketed (m.c.f.)	Percentage of Marketed Reserves to reserve as of Jan. 1st.
1944	370,200,000	15,644,540	4.225969%
1945	354,555,460	15,698,880	4.427764%
1946	338,856,580	14,612,100	4.312178%
1947	324,244,480	11,600,800	3.577794%
1948	312,643,680	10,592,500	3.388042%

The estimated volumes and resultant rates set out in the foregoing table are, of course, subject to such change as may arise from more accurate Field reserves and annual through-put as may be developed during the course of the Hearing.

Now, just to summarize. It is my belief that a method of depreciation accounting which involves the assigning of specific natural gas reserves to groups of plant and equipment as opposed to a method whereby the total field reserves are assigned to the total investment is going to involve some additional expense from an engineering standpoint and will most certainly involve additional expense in accounting costs, because a great deal more attention will have to be paid to the movement of plant and equipment from time to time, which has an influence throughout the year on the annual operating account. I would not like to leave the impression before this Hearing that the more complicated method of depreciation accounting could not be followed, but I do say that it is my considered opinion that such a procedure will be unduly complicated, more particularly in the future years and will certainly lead to a complicated set of deprec-

iation records which in turn may lead to varied engineering and accounting opinions as future reviews of this Company's operations are undertaken by the Board. It is my view that depreciation, both in the engineering and accounting aspects is probably the factor in cost determination which gives rise to the greatest number of different opinions as to the propriety and accuracy of the calculations.

Q MR. CHAMBERS: Mr. Kirkpatrick, Method "B" as you have it in Exhibit 80 is the basis on which the depreciation is shown in Exhibit 79 to which you will now go.

A Yes sir, that is right.

THE CHAIRMAN: Again I am inclined to think if counsel can do so, they should cross-examine Mr. Kirkpatrick on this subject which he has just discussed. All of you at some time or another in the next few months are going to have to prepare Argument. Now we have been writing something about this hearing up to date in the tentative preparation of a decision. We think it is somewhat disconcerting to have to jump from volume to volume to get something of a continuity. You are going to face the same thing when you come to prepare your Argument and for the convenience of everyone, if you are prepared to do it, I would like cross-examination on this point right now before Mr. Kirkpatrick goes on with anything further.

MR. CHAMBERS: I personally have no objection but Mr. Kirkpatrick may have some views because his method is somewhat interfolding and I suggest we might at least go through with the costs, because the application of this principle may clarify some of the questions in the minds of counsel.

THE CHAIRMAN: In Exhibit 79?

THE WITNESS: Yes, sir.

Q Well, you should know better than I do, Mr. Kirkpatrick, so go ahead with Exhibit 79. But I do think you should accept my suggestion that you should finish with one subject at a time. You are going to find it extremely difficult to wade through these volumes of evidence when coming to prepare your Argument. Going from one place to another you lose the continuity. I have already experienced that difficulty.

A Turning now to Exhibit 79, which is entitled "Statements of Total Estimated Costs including Depreciation and Return of Capital Employed."

Just before proceeding with this particular exhibit, I wonder if I might make a few comments. Submission M-9 and the other cost schedules were prepared by us in late 1944 and early 1945 and are based upon the combination of historical cost information available to us for a large part of 1944 and, in respect of the years 1945 to 1948 inclusive, are based upon a projection of costs using the 1944 facts as a starting point. Since that time, we have had an opportunity of reviewing the estimates for 1944 with the actual cost for 1944 as are now set forth in the exhibits filed this morning, identified as Exhibit 78. This latter exhibit relative to 1944 actually seems to bear out the relative accuracy of the 1944 costs as originally estimated.

The point I would like to make is that, since the cost submissions were originally prepared and distributed through the Board to the various interested parties, developments during this hearing to date and future developments may have an influence on the final cost picture.

As an example, we now have a further appraisal value from Mr. Hill as set forth in his Exhibit 60 amounting to some $44,000.00, and we also know now that the capital expenditure in respect to the improvements to the Scrubbing Plant fan-house will not amount to the originally estimated sum as set forth in Submission M-7. The fan-house improvements were originally estimated to amount to some $30,500.00 but the position now is that this expenditure is likely to be more on the order of $3,500.00. These two adjustments are compensating to some extent but serve to demonstrate the type of information which has arisen since our original cost submissions were prepared, and while they are not likely to have an important influence on the cost determination for the five-year period, may never-the-less in the aggregate warrant the preparation of a revised master cost schedule towards the close of this hearing. It would not be practicable to attempt to revise our cost submissions on each occasion that some new development arises, and in any event, would only lead to confusion in the long run. I would like to suggest, therefore, that the Board and that the other interested parties at this hearing look upon the cost submissions presently under examination as pilot statements intended to demonstrate what, in our opinion, is the extent and influence of costs in the final price of residue gas to the consumer or to the cost of services rendered apart from the residue gas market. It is our thought that these cost determinations as they stand at the moment form a part of the over-all unfolding of the total picture and, while we believe that they represent our best opinion and thought on the procedure which should be adopted in arriving at service costs, we would be loathe to say that they are

not subject to some amendments. We feel therefore that these cost submissions should be reviewed with this thought in mind.

We would also like to bring out that it was necessary to devote a considerable amount of preliminary thought and accounting research to the best form in which service cost determination should be arrived at. Having in mind that Madison's operation is fundamentally a series of utilities within a utility and having in mind that a part of Madison's facilities and operations service other than the residue gas market, we believe that you will understand the complexities which arise in determining a fair and proper distribution of costs to all concerned. It is our hope that as this hearing draws to a final conclusion and, before argument, that we may be in a position to redraft these costs in perhaps a condensed and summarized form giving effect to such new developments from engineering and other standpoints which may have arisen.

(Go to page 2071)

WITNESS: Proceeding now to Exhibit 79; the first two pages are simply indices of the report to enable us to quickly select any particular subject.

MADISON NATURAL GAS COMPANY LIMITED

EXPLANATION OF SCHEDULES INCLUDED IN REPORT M-9

INTRODUCTION:

The following comments are intended to explain the several schedules attached to and forming Madison Natural Gas Company Limited Report M-9 for submission to the Natural Gas Utilities Board at the Natural Gas Rate Hearing opening March 12th, 1945.

All schedules hereto annexed are intended to assemble in one report the total estimated costs in terms of dollars which Madison Natural Gas Company Limited estimates will be incurred by it in its operations for the years 1944 to 1948 inclusive. The attached schedules have been prepared in groups according to the general character of the expense or costs involved, as follows:

"A" GROUP - Summary of total estimated costs including Depreciation. Return on Capital Employed and Administration (One Schedule for each year).

"B" GROUP - Direct Departmental Operating Expenses (One schedule for each department for five years).

"C" Group - Statement of Distribution of Working Capital and Administrative and General Expense (One schedule for each year).

"D" GROUP - Calculation of Distribution of Depreciation Expense (One schedule for each year).

"E" GROUP - STATEMENT OF CAPITAL EMPLOYED AND RETURN Thereon (One schedule for each year).

Q MR. CHAMBERS: Mr. Kirkpatrick, as I understand it the costs in this Exhibit 79 do not include anything for the costs of

purchase of gas?

A No, there is no cost included here for the purchase of gas or any figures in this particular schedule intended to set forth the estimated sale income. This is the position in between the point where gas is purchased and it is sold, - in other words, the amount of money involved in our opinion in that operation.

All schedules hereto annexed have been indexed in the upper right-hand corner to permit of ready identification, and have been grouped as aforesaid according to general character. Each schedule is first identified by the report to which it pertains (Report M-9); each schedule is then indexed according to group ("A" Group, "B" Group, etc.); and each schedule is finally identified, in the case of schedules covering one year only, by the year in question (1944, 1945, etc) and in the case of schedules covering five-year periods, by departmental order (1, 2, 3 etc.). For example, the summary of total estimated costs for the year 1944 is identified as M-9-A/44; the same schedule for 1945 is identified as M-9-A/45, and so on in each subsequent year. The schedules covering estimated direct expenses of the operating and service departments each cover a period of five years and are identified in departmental order. For example, Scrubbing Plant - Seaboard for the five years 1944 to 1948 inclusive is identified as M-9-B-1, and each of the remaining departments in the same manner with the final index number only being changed. A complete index of all schedules herein contained is to be found immediately preceding this explanation.

In certain of the attached schedules will be found amounts completely bracketed thus ( ). Such amounts contained in complete brackets are to be read as credits. Again

on certain schedules will be found groups of two amounts with a single bracket thus:) Such bracketed amounts are to be read as a combination of figures. On certain of the attached schedules will be found the symbol thus: Ø. This symbol is intended to indicate related figures transferred from one point in the schedule to another point in the same schedule.

For example, Schedule M-9-D/44, Page I, Column 2, contains at the foot thereof a bracketed figure in the amount of ($2,490,00) Ø. This indicates that the aforementioned sum of $2,490.00 is to be read as a credit figure and that, by reason of the identifying symbol therewith, has been transferred in the case of the schedule under discussion in part to each of the Scrubbing Plants, Seaboard and Girbotol, No. I Main Compressor, Boiler Plant and Electric Plant, and represents a redistribution of certain additions in the year 1944 of a general character which, for purposes of depreciation calculations, are redistributed to the five main plants aforementioned. On Schedule M-9-D-/44, Page I, Column (2), at the top thereof, will be found an example of a group of figures thus: $1,037.50) 498.00) Ø. This indicates that, in the case of the Seaboard Plant, the aforementioned two amounts should be read as one and are added together to determine the net balance of the Seaboard Plant in respect of Column (3) of the said schedule.

It is important to point out that the cost of gas purchased from producers and the sales of natural gas to Madison's customers are not contained in any of the attached schedules since Report M-9 is confined to a consideration of the total estimated operating costs including direct expense, depreciation and return, and does not include at this point any element of cost of the natural gas nor sales price of the

natural gas as these are matters yet to be determined by the Board..

All of the attached schedules have been prepared for the five-year period 1944 to 1948 inclusive. This five-year period has been selected inasmuch as it contains one year (1944) of known operations from which historical costs can substantially be determined. The remaining period, 1945 to 1948, represents one full year of estimated war operations (1945) and that was not a very good guess, one year in which it is estimated that hostilities may have completely terminated by the end of June (1946), and two years of estimated post war activity (the years 1947 and 1948). In respect of direct operating expenses contained in the "B" Group of schedules, the year 1944 was estimated on the basis of actual operating costs for the nine-month period ending September 1944 adjusted to estimated twelve months' operation after allowance for any known unusual expenditures of a non-recurring character. The preparation of the figures for the year 1944 was commenced about November 1st, 1944, and the assembling of estimated costs for the years 1945 to 1948 inclusive was commenced at a later date, at which date actual operating costs for the eleven-months ending November 30th, 1944, were available. Hence, the costs for the latter four years are closely related to historical costs for the year 1944 with such adjustments upwards or downwards as may appear to us to be necessary in each operating department.

For example, on schedule M-9-B-1, sub-code 16, provision has been made for estimated cost of grids in the years 1945 and 1948. Again on Schedule M-9-B-20, sub-code 2, elimination has been made of wages for security guards as of July 1st, 1946, on the assumption that the present security measures will cease on the cessation of hostilities.

And at that point I would like to say that again demonstrates the lack of, that it is impossible at this time to be constantly changing this cost basis as new developments arise. Another point is developed in connection with that very point of security guard. The Company, after proper representation to the Security Authorities in Ottawa, have received permission to reduce the number of security guards that are maintained at its Plant in Turner Valley and our costs therefore cease or rather are diminished from the figures shown as for 1945 and 1946 to approximately one-third. That is another example of the fact that we hope that these statements will be looked upon as pilot statements subject to final revision before the close of this Hearing.

GENERAL EXPLANATION OF SCHEDULES

The following is a more detailed general explanation of each group of schedules. Insofar as is possible, each schedule has been cross-identified to permit of a ready and intelligent examination of the contents of this report. Where such cross-identification does not exist, the explanation which follows will assist.

"A" GROUP

SUMMARY OF TOTAL ESTIMATED COSTS
INCLUDING DEPRECIATION, RETURN ON
CAPITAL EMPLOYED AND ADMINISTRATION

Schedules M-9-A for the years 1944 to 1948 are summaries of detailed costs prepared on and carried forward from the underlying schedules "B", "C", "D", and "E".

Reference to Schedules M-9-A for each of the years 1944 to 1948 inclusive will demonstrate that all operating activities of Madison Natural Gas Company Limited have been

divided into two main groups. The first main group, known as operating departments, being codes 25-1 to 25-24 (as shown in the extreme left-hand column of the respective schedules) constitutes the main functional operations of the Company, namely, scrubbing, compression, gathering and repressuring. The second group are all departments of a service or administrative character being codes 25-30 to 40 inclusive and are those departments for which separate cost accounting records are maintained for the purpose of assembling total costs, which total costs are subsequently distributed between external charges and internal charges. In the "A" Group of schedules, the term "External charges" represents charges made to outsiders for services rendered by Madison. At the present time, such external charges are made exclusively to Royalite Oil Company Limited and Valley Pipe Line Company Limited, and all such external charges are made to the aforesaid companies on the same bases as internal charges are distributed to Madison's own operations. In other words, all charges to Royalite Oil Company Limited and Valley Pipe Line Company Limited include proper proportions of the total administrative and general expense, depreciation and return on capital employed in the respective service departments. The total external charges for each year are as set forth in Column (8) of the "A" Group of schedules.

Column	Explanation
Code	This column is inserted merely to identify the particular accounting cost codes from which the expenses of the respective departments have been determined.
Particulars	This column is intended to identify the operating or service or administrative department in question.

(1) Direct Expense:

This column sets forth the estimated direct expense of the respective operating and service departments, the totals of which are carried forward from the "B" Group of schedules which contain detailed particulars of the elements of expense building up to the totals contained in this column (1).

(2) Schedule:

The schedule references in this column indicate the source of the respective direct expenses for operating departments and service departments.

(Go to page 2078)

(3) Administrative and General Expense:

This column is intended to allocate the proportion of total administrative and general expense applicable to each of the operating departments and to those service departments (boiler plant and electric plant), the operations of which are deemed to have required a proportion of the administrative and general expense of the Company. The manner in which the relative proportions applicable to each department were determined are set forth on underlying schedules M-9-C for the years 1944 to 1948 inclusive, and it will be observed that administrative and general expense is applied, in respect of service departments, only to the boiler and electric plants. It is considered that the operations of the remaining service departments do not entail any substantial or material administrative direction. These departments have, therefore, not been charged with any proportion of the total administrative and general costs.

I might say even if that had been done, and I do not think that properly should have been done - even if those service departments had been charged with the administrative and general expenses that expense would cycle its way back to general costs in any event.

(4) Depreciation Expense:

This column distributes the respective departmental depreciation as set forth in greater detail on schedules M-9-D for each of the respective years. The total of this column is carried forward from the aforementioned "D" Group of schedules. No depreciation expense is

incurred in respect of field engineering, guards and watchmen, laboratory and administrative and general departments as no depreciable fixed assets are involved in these latter operations.

(5) Return on Capital Employed:

This column distributes the total computed return on specific capital employed as more fully detailed in the Schedules M-9-E for the respective years.

(6) Contingency for Unforeseen Expenses:

A contingency allowance for unforeseen expenditures has been provided in the amount of $20,000.00 for each year. In computing the direct expenses of the operating and service departments, no allowances have been made for unusual or extraordinary expenditures which may arise through breakdown in operating plants, such as compressors, engines, structures, etc., nor for any breakages in the gas gathering lines, nor has any weight been given to the possibility of increased operating costs arising through higher wage levels or increases in the costs of materials, supplies, chemicals, etc. This contingency is therefore added hereto and represents the following percentages in each respective year of the total direct expense plus administrative and general expense of the operating departments.

	Direct Expense	Administrative and general expense	Total	Contingency	%
1944	354,431.00	45,358.58	399,789.58	20,000.00	5.00
1945	392,551.00	40,846.76	433,397.76	20,000.00	4.61
1946	370,839.00	40,284.62	411,123.62	20,000.00	4.86
1947	356,826.00	40,346.22	397,172.22	20,000.00	5.04
1948	364,387.00	40,760.51	405,147.51	20,000.00	4.94
	1,839,034.00	207,596.69	2,046,630.69	100,000.00	4.89

This contingency amount has been pro-rated over the operating departments in the proportion that the total direct expense of each plant bears to the total of all direct expenses of the operating departments.

And reference to Exhibit 78 will show that on the Exhibit we have marked as our Exhibit M-9-A-44 actually that that contingency amount is necessary. In other words we underestimated our operating cost by some $18,000.00 so that an analysis of Exhibit M-9-A will show $20,000.00 originally estimated was substantially required.

(7) Gross Operating Costs:

This column is the sum of the totals set forth in Columns (1) to (6) inclusive.

(8) Less External Charges:

External charges represent the estimated billing to Royalite Oil Company Limited and Valley Pipe Line Company Limited for their proper proportion of the total costs for the services rendered by Madison Natural Gas Company Limited during each year. In the year 1944, the amount of $28,042.04 shown as an external charge against compressor plants and the total of $28,042.04 as an external charge against gathering systems represents Royalite Oil Company Limited's proportion of the costs of gathering wet natural gas through Madison Natural Gas Company Limited's Wet Gas Gathering and Compression systems to the point of delivery of the said gas to the No. 1 Gasoline Plant.

Q Will you pause there a moment. As I understand the north return fuel line is not part of the Madison system ?

A No sir, it is not.

Q So therefore there is nothing in here for the operating of the north return fuel line ?

A No, nothing. The amounts of $28,042.04 which happens to be a coincidence, there is an explanation for that later on, is the amount which we estimated should be borne by the gasoline plant in respect of the gathering of wet gas insofar as that wet gas disappeared from shrinkage at the gasoline plant proper and no provision is included in this sum for the gathering cost of the return fuel north.

Q And you are suggesting here it should be divided ?

A No, we are suggesting that the volume formula will give us a total of $76,000.00 and we redivide that in a somewhat arbitrary manner but it is fully explained later.

The figures, contained in Columns (8) of Schedules "A" in the lower section of this Exhibit under service departments represent the external charges made to Royalite Oil Company Limited and Valley Pipe Line Company Limited in respect of their proper proportion of the respective service departments utilized by them. Such services utilized by Royalite Oil Company Limited and Valley Pipe Line Company Limited are confined substantially to the purchase of steam from Madison's Boiler Plant and electric energy from Madison's Electric Plant, and these external charges or billings are determined on a basis of total costs as set forth in Column (7), pro-rated over all users (including Madison) in the proportions of the total volume of steam and electrical energy utilized by all recipients of the service.

(9) and (10)
Internal Transfers:

For purposes of illustration and explanation as to the

use of Columns (9) and (10) reference is made to Schedule M-9-A/45, as this is the first year in which internal transfers appear in both the operating department and service department sections of the "A" Group schedules.

Column (9) represents the debit charges made to the respective operating departments, cross-identified as (a), (b) and (c), to the relative credits under Column (10). In Column (10), the following credits have been computed:

(a) This credit ($39,567.64 for the year 1945) represents a transfer from total compression costs to the repressure system and is the estimated proportion of No. 1 Main Compressor plant costs identifiable with the proposed repressure system which will be utilized for the purpose of storing residue gas in Turner Valley. More detailed particulars of the manner in which this transfer has been computed are to be found in Madison's Report M-12.

(b) This internal transfer ($39,543.41 for the year 1945) represents the estimated proportion of the costs of operating the No. 3 Compressor Plant identifiable with the operations of that plant in connection with the compression of residue gas from Gas and Oil Products Gasoline Plant. This cost is transferred internally to the South Residue System. More detailed particulars of the manner in which this transfer has been computed are to be found in Madison's Report M-12.

(c) This internal transfer represents estimated cost

to be paid by Madison to British American Gas Utilities Limited in respect of transportation by the latter Company of residue gas from Madison's South Residue System from the Hartell junction to Madison's Scrubbing Plant. Pending a more definite determination of the actual charges to be paid in respect of this operation Madison has set up as an estimated charge the sum of $1,000.00 per month in accordance with the interim rate set forth in Order No. 9 of the Natural Gas Utilities Board and dated January 5th, 1945, as it is presently estimated that the volume of residue gas to be transported by British American from the Hartell junction to the Scrubbing Plant at the rate of six-tenths of a cent per thousand cubic feet will not in any one month exceed the minimum of $1,000.00 alternatively established by the Board.

The remaining internal transfers shown in Column (10) and relative to the second section of these schedules under service departments represents the amount charged to Madison's own operations after provision for external charges set forth in Column (8) of the second section.

(11) Net Operating Costs:

This column is the sum of Columns (7) to (10) inclusive grouped by main operating functions of scrubbing, compressing, wet gas gathering, residue gas gathering and repressure system. Further particulars of the application of the net costs in Column (11) are to be found in Madison's submissions as hereunder detailed:

Scrubbing Costs	Madison Report M-13
Compressing Costs	Madison Report M-12
Wet Gas Gathering Costs	Madison Report M-12
Residue System	Madison Report M-12 & M-14
Repressure System	Madison Report M-12

"B" Group

ANALYSIS OF DIRECT EXPENSES
OPERATING AND SERVICE DEPARTMENTS

The "B" Group Schedules M-9 set forth the details of estimated expense of each of the operating departments and of each of the service departments, and the totals for each year are carried forward into Columns (1) of the respective annual schedules M-9-A. A separate schedule for each operating and service department has been compiled for the five-year period, 1944 to 1948 inclusive. In all departments, reference was made to the known historical costs for the nine months ending September 1944 in determining the estimated 1944 costs; and in respect of the years 1945 to 1948 inclusive, reference was made to the known historical costs for the eleven months ending November 1944. In estimating the various items of expense of each department, careful consideration has been given to the possible upward or downward trend in such expenses arising by reason of increases in costs through the installation of additional equipment, and consideration has been given to the possible reduction of the expenses of the operating departments where any such estimated reduction could be foreseen. No weight has been given to any possible increases arising through higher wage levels or material costs as provision for unforeseen expenses of this character have been taken care of in the contingency of $20,000.00 applied in Column (6) of the "A" Group of schedules.

Column	Explanation
Group Classification	This grouping is merely intended to serve as a ready identification by groups of the various underlying items of expense.
Sub-Code	This column sets forth the underlying source of the features of expense from the respective departmental cost accounting records.
Particulars	This column is intended to explain generally the character of each item of expense.
Year	The estimated total annual expense by years is set forth in the remaining columns.

(Go to Page 2086)

It is believed that the character of all expenses can be determined from the description set forth in the particulars column of each of the "B" Group of Schedules with the possible exception of the following: Sub-Code 42 "Protection Service" represents the costs of guards, watchmen, search light operation and other security measures incurred in maintaining protective service against sabotage during the period of hostilities. Sub-Code 50 "Employee Benefits" represents Madison's share of the cost in maintaining annuity, health, hospitalization and insurance plans for the benefit of those employees qualified to enter such plans.

"C" GROUP

DISTRIBUTION OF WORKING CAPITAL AND ADMINISTRATIVE AND GENERAL EXPENSES

This group of schedules has been prepared to set forth the manner in which the estimated requirements of working capital and the estimated administrative and general expenses for each respective year have been distributed to the main operating departments and to the two main service departments (Boiler and electric plants).

Working capital estimated in the amount of $190,000.00 for each of the years 1944 to 1948 inclusive is composed of cash working requirements and inventories of materials and supplies required for maintenance and operating purposes (exclusive of any materials or equipment of a capital nature). The term administrative and general expense as used throughout all schedules in this Report M-9 is in respect of corporate management and accounting costs which do not lend themselves to direct apportionment to any one or more operating departments. Such corporate management and accounting expenses are incurred exclusively in the

maintenance of the Company's Head Office at Calgary. All direct supervision and administration incurred in the Turner Valley Division of the Company have already been apportioned directly on the basis of each month's operations.

Therefore the working capital and the administrative and general costs as set forth on the "C" Group of schedules for each year have been distributed over all main operating departments and the boiler and electric plants in the service department group on the basis of direct operating expenses excluding any charges from boiler and electric plants to such departments. The purpose in excluding boiler and electric plant costs from direct operating expenses to determine the proration of working capital and administration is to overcome a duplication of working capital and administration in those operating depqrtments utilizing these latter services.

Column	Explanation
Particulars	This column identifies the main operating and service departments which have been charged with a proportion of working capital and administrative and general expenses. It will be observed that the service departments other than the boiler plant and electric plant have not been charged directly with any proportion of thess two features of cost as it is not deemed that the letter group of service departments incurred any substantial or material corporate management or accounting cost in respect of Head Office functions. While it is true that the service departments so excluded from this apportionment did carry an incidental proportion of the working capital involved in the over-all operation,

it has not been deemed necessary to apportion any part of the said working capital to these departments for the reasons that such apportionments would be incidental, and in any event, would be recycled through the cost accounting procedure into the main operating departments and the boiler and electric plants.

Q THE CHAIRMAN: Would you like a rest at this time, Mr. Kirkpatrick.

A As you say, sir.

Q I think we will have a rest for ten minutes.

(A short adjournment was here taken).

CONTINUED DIRECT EXAMINATION OF W. C. KIRKPATRICK:

A Direct Operating Expenses Excluding Boiler and Electric Plant Charges.

The amounts set forth in Column (1) of the "C" Group schedules are taken from the respective yearly totals shown on the "B" Group Schedules after deducting charges therein contained in respect of sub-code 34 "Steam" and Sub-code 35 "Electric Power". Thus, the total of direct operating expenses for the Scrubbing Plant - Seaboard for the year 1944 per Schedule M-9-B-1 is shown as $76,447.00, from which total has been excluded from sub-code 34 the sum of $3,400.00 and from sub-code 35 the sum of $7,185.00 to arrive at a net operating cost for this purpose of $65,862.00. Similar deductions have been made in respect of the remaining departments shown under this Column(1).

Percentage:

This column is the percentage which each of the amounts in Column (1) bears to the total of Column (1).

Working Capital:

The respective departmental amounts of working capital are then determined by applying the percentages shown in Column (2) to the total of Column (3). These respective departmental totals are then carried into the "E" Group of Schedules for each respective year under Column (5).

Administrative and General:

The respective departmental proportions of administrative and general expenses are determined by applying the percentages shown in Columns (2) to the total of Columns (4). The totals in Columns (4) have first been determined from Schedule M-9-B-22 and the departmental amounts as set forth in Column (4) of the "C" Group are carried into Columns (3) of the "A" Group.

I will refer now to the "D" Group Schedules.

"D" GROUP

CALCULATION AND DISTRIBUTION OF DEPRECIATION EXPENSE

This is based on the formula "B" which was discussed in more detail this morning.

The "D" group of schedules has been prepared for the purpose of setting forth the calculations to determine the estimated annual amount of depreciation.

These schedules are broken down into two pages, Page 1 being the computation to determine the depreciation in respect of that part of the physical plant and equipment which is estimated to have a physical or service life equal to the estimated period of time which it is assumed will be required to exhaust the total marketable natural gas in the Turner Valley field. Page 2 of the depreciation schedules set forth the depreciation computations in respect of that part of the physical plant and

equipment, the general character of which indicates a service life of something less than the estimated period of time necessary to exhaust the reserves of natural gas in the Turner Valley field.

Columns (1) to (5) inclusive of this "D" Group of schedules are designed to set forth the method by which the total annual depreciation expense has been determined. Columns (6) to (9) inclusive illustrate the manner in which the investment in depreciable plant has been built up relative to the period commencing January 1st of each succeeding year. A study of the effect of these figures will reveal that depreciation on physical plant and equipment has been computed on the basis of the opening balance at January 1st of each year plus depreciation on 50% of the current year's additions on the general principle that, while investment in physical plant and equipment may and will likely take place in varying amounts in each month of each calendar year, for practical purposes it is deemed that all capital additions in each year take place on June 30th and depreciation is therefore computed in respect of a six-month period during the year of initial investment. The remaining 50% of the capital asset investment is then added to determine the depreciable balance as of January 1st of the following year.

In explanation now of the schedules.

Column — Explanation

Particulars — This column is intended to identify the respective departments to which the total investment in physical plant and equipment has been distributed.

(1) Net Balance January 1st.

The amounts set forth in this column are the respective departmental investments as of January 1st in each year, and in respect of the year 1944 have been computed by distributing the total physical plant and equipment as shown on Page 22 of the Appraisal Report of Messrs. Ford, Bacon and Davis (Report M-6) .....

Q MR. CHAMBERS: That is Exhibit 59?

A Yes, that is now Exhibit 59. It is shown in the following manner:

Total physical plant and equipment (less depreciation) including general overhead costs	$ 2,097,704.00
Less prepaid Girbotol royalty included above	27,576.38
Total	$ 2,070,127.62
Less difference explained below	41.75
Total as per Column (1) Schedule M-9-D/44	$ 2,070,085.87

The difference of $41.75 above mentioned is a small difference arising through the application of a rate of general overhead costs used by Madison in arriving at the total net cost of reproduction which rate differed slightly from that set forth in the Ford, Bacon and Davis report.

Mr.Hill's report speaks of a 9% figure, and he rounded the result off to the closest $100.00. We did not observe that until we completed this report and we had applied this straight 9%, and we found that there was this small difference.

(2) Add 50% of Current Year's Additions.

50% of the estimated current additions for each year have been added herein on the principle that each year's

additions to physical plant and equipment should be subject to depreciation for six months only. In other words, the total additions for each year are depreciated only to the extent of 50%. On Page 1 of Schedules M-9-D/44 and M-9-D/45 it will be observed that the estimated additions in respect of general plant and equipment in the amounts of $2,490.00 and $125.00 respectively have been redistributed to the Seaboard, Girbotol, No. 1 Main Compressor, Boiler and Electric Plants, to the extent of 20% of the aforementioned sums. General plant and equipment includes items of a general nature such as fire extinguishers, first-aid equipment, plant tools, etc., intended for general use within the No. 1 Main Plant area. In Column (2), Page 2, a credit sum appears in each year in respect of transportation equipment and this reduction represents the estimated retirement of automotive and transportation equipment. Further particulars of the estimated annual additions are to be found in Madison Report M-7.

(3) Net Balance December 31st:

The respective departmental totals in this column are the sums of Columns (1) and (2).

(4) Rate of Depreciation:

Further particulars of the method used to determine the unit rates of depreciation and straight line rates of depreciation are to be found in Madison Report M-10.

That is the report we discussed this morning.

(5) Amount of Depreciation:

The total respective departmental depreciation in Column (5) is determined by applying the rates set forth

in Columns (4) to the balances set forth in Columns (3) in respect of all assets shown on Pages 1 of the "D" Group. The amount of annual depreciation on the assets listed in Pages 2 of the "D" Groups is determined by applying various straight-line rates as outlined in Report M-10.

(6) Net Balance at December 31st:

The totals set forth in Columns (6) are taken from Columns (3) and represent the net investment in depreciable assets at December 31st of each year.

(Go to Page 2094.).

(7) Add Remaining 50% of Current Additions:

The purpose of this column is to add to the depreciable assets the remaining 50% of each year's additions which were not subject to depreciation in the current year but necessarily become subject to depreciation as of the beginning of the succeeding year. The amounts set forth in this Column (7) are in agreement with the amounts set forth in Column (2) of the "D" Group of Schedules.

(8) Less Depreciation for the Year:

This Column (8) represents the amount of depreciation as previously computed under Column (5) of the "D" Group of Schedules.

(9) Net Balance at January 1st:

This Column (9) is the sum of Columns (6) to (8) inclusive and represents the net investment in depreciable assets as of January 1st of the succeeding year. These amounts will be found carried forward to Columns (1) of the succeeding year's schedule "D".

"E" GROUP

STATEMENT OF CAPITAL EMPLOYED AND RETURN THEREON

The "E" Group of Schedules set forth the total amount of capital specifically employed in each operating and service department to determine the return thereon.

The Column	Explanation
headed Particulars.	This column, down to the line headed "Total Fixed Capital Assets" identifies the respective operating and service departments to which

the total investment in fixed capital assets has been distributed. Following "Total Fixed Capital Assets" are the prepaid Girbotol Royalty and the working capital which have been added for the purpose of arriving at the total specific capital employed as at the beginning of each fiscal period.

(1) Net Balance January 1st:

The sub-totals in Column (1) for "Total Fixed Capital Assets" are in agreement with the grand totals in Column (1) of Schedule M-9-D. To these sub-totals have been added prepaid Girbotol Royalty and Working Capital to arrive at the "Total Capital Employed" at the beginning of each year.

(2) Add 50% of Current Year's Net Additions:

This column represents 50% of the estimated annual additions to physical plant and equipment distributed by operating and service departments, and will be found to agree with the amounts set forth in Column (2) of the "D" Group of Schedules.

(3) Less 50% Current Year Depreciation:

This column represents 50% of the total depreciation as shown in Columm (5) of Schedules M-9-D together with 50% of the annual amortization of the prepaid Girbotol royalty.

(4) Capital Employed in Fixed Capital Assets:

This Column is the sum of Columns (1) to (3) inclusive.

(5) Distribution of Working Capital:

Columns (5) are intended to redistribute to specific

departments the total working capital in accordance with the amounts set forth in Columns (3) of the "C" Group of Schedules. It will be observed that the prepaid Girbotol royalty has been applied in its entirety to the Scrubbing Plant-Girbotol as this royalty is relative to the operations of that phase of purification only.

(6) Total Capital Employed:

This Column is the sum of Columns (4) and (5).

(7) Return on Capital Employed:

This column is the amount arrived at by applying the 9½% net return on the total specific capital employed as determined in Column (6). The amounts shown in this column are then carried by respective departments into Columns (5) of the "A" Group of Schedules.

I do not think I have any particular observations to add to that submission.

Q MR. CHAMBERS: Mr. Kirkpatrick, should Exhibits 81, 82 and 83 be postponed now or would you prefer to go on? I would like to get your own view.

A There is very little left of these, Mr. Chambers. It is a matter of agreement.

Q THE CHAIRMAN: They are really subdivisions of the one we have just dealt with.

A Well they lead one to the other.

Q It may be what I said a little time ago is not quite applicable and that they can be treated as one item of which there are several divisions.

A They might just as well have been incorporated in one

report but we subdivided them for a matter of convenience.

Q All right, perhaps you had better go ahead then, Mr. Kirkpatrick. I did not quite realize the significance of the continuity.

Q MR. CHAMBERS: Do you propose to deal with Exhibit 80 now?

A M-12. Do you wish me to go ahead, Sir?

Q THE CHAIRMAN: Yes.

A Proceeding now to Exhibit Number 81, which is entitled "Estimated Cost of Wet Gas Gathering and Wet Gas Compressing for the years 1944 - 48."

I would just like to mention, probably I have already, that these Exhibits 81, 82 and 83 are essentially subdivisions of Exhibit 80.

Q MR. CHAMBERS: Exhibit 79.

A I beg pardon, Exhibit 79. The first page is simply an index of the contents.

MADISON NATURAL GAS COMPANY LIMITED

EXPLANATION OF SCHEDULES INCLUDED IN REPORT M-12

INTRODUCTION:

The following comments are intended to explain the several schedules attached to and forming Madison Natural Gas Company Limited Report M-12 for submission to the Natural Gas Utilities Board at the Natural Gas Rate Hearing opening March 12th, 1945.

All schedules hereto annexed are intended to assemble in one report the total estimated costs in terms of dollars and estimated costs per unit handled through Madison's wet gas gathering and compression system. The attached schedules have been prepared in the following general groups:

"A" GROUP - Summary of Estimated Net Wet Gas Gathering and Compression Costs (One schedule for the years 1944 to 1948).

"B" GROUP - Statement of Estimated Cost of Wet Gas Gathering and Compressing (One Schedule for each of the years 1944 to 1948 inclusive)

"C" GROUP - Statement of Distribution of Compressor Plant Costs as between wet gas and residue gas operations (One statement for the years 1945 to 1948 inclusive)

"D" GROUP -
Page 1 Distribution of Wet Gas Gathering and Compression Costs to Royalite Gasoline Plant (One schedule for the years 1944 to 1948 inclusive)

Page 2 Statement to determine percentages of wet gas gathering and compression costs applicable to Royalite Gasoline Plant (One schedule for the years 1944 to 1948 inclusive)

General Explanation of Schedules

The following is a more detailed general explanation of each schedule or group of schedules hereto annexed. Insofar as is possible, each schedule has been cross-identified to schedules contained in this Report M-12 or to related schedules contained in other reports submitted by Madison Natural Gas Company Limited. Where such cross-identification does not exist, the explanation which follows will assist.

Schedule M-12-A

This schedule is designed to assemble in one

report the net operating costs of the wet gas gathering and compression systems for the years 1944 to 1948 and represents the estimated gathering and compression costs chargeable to the wet gas operations of Madison after transfer from the total costs of the gathering and compression systems of that proportion of compression costs as are chargeable to the South Residue Gathering System and the Residue Gas Storage System.

Column — Explanation

The particulars contained in the left-hand column of this Schedule M-12-A identify the character of the compression and gathering costs and also set forth particulars of the volumes of the gas compressed and gathered and the particulars of the unit costs resulting therefrom.

I should have said and set forth particulars of the estimated volume.

Years 1944 to 1948 — Net Operating Costs

This group of columns identified as "Net Operating Costs" are all carried forward from underlying Schedules M-12-B and represent the net wet gas gathering and compression costs for the years 1944 to 1948 inclusive, after deletion from the total gathering and compressing costs of the proportion of such costs applicable to the repressure system and the south residue system.

Totals 1944 to 1948 This column is the sum of the costs set forth

in the years 1944 to 1948 inclusive.

At the foot of this Schedule M-12-A, under the section entitled "Summary of Unit Costs" are set forth particulars of the estimated total volume of wet gas to be compressed and gathered in terms of the volumes entering the No. 1 Main Compressor Plant. From this total volume has been subtracted the volume compressed and gathered for account of the Royalite Gasoline Plant as determined from calculations set forth on Schedule M-12-D (Page 1). The net volume compressed is the remaining volume of wet gas after assigning to the Royalite Gasoline Plant the volume utilized by that plant in the operation of processing and extracting natural gasoline.

The unit costs are then set forth to show the cost per m.c.f. of the net volume compressed and the cost per m.c.f. of the net volume gathered being the result of a division of the net volume compressed and gathered into the totals of the compression and gathering costs.

SCHEDULES M-12-B

STATEMENT OF ESTIMATED COST OF
WET GAS GATHERING AND COMPRESSING

This group of schedules is intended to set forth the total estimated cost of the wet gas gathering and compression systems and one schedule has been prepared for each of the years 1944 to 1948 inclusive.

Column	Explanation
Particulars	This column identifies the compression and gathering systems comprising Madison's plants utilized in the operation of gathering and compressing. The particulars column also identifies the nature of the expense.

Column

(1) Schedule:

This column identifies the source of all costs contained in column (2) from the respective columns designated in the "A" Group of schedules of Madison Report M-9.

(2) Total:

This column transfers the total costs from the above mentioned "A" Group of schedules.

(3) Less: Proportion applicable to repressure system

This column sets forth the estimated proportion of the total costs of the No. 1 Main Compressor Plant applicable to the repressure system as computed in accordance with Schedule M-12-C. It will be observed that in the year 1944 no costs are applied to the repressure system as this system did not come into operation until 1945.

(4) Less: Proportion applicable to South Residue System

This column sets forth the estimated proportion of the operating costs of the No. 3 South Compressor Plant applicable to the South Residue System as determined in accordance with Schedule M-12-C. It will be observed that no proportion of the No. 3 South Compressor Plant is applied to the South Residue system in the year 1944 as this system did not come into operation until 1945.

(5) Sub-Total: Wet GasGathering and Compression Costs.

This column is the sum of Columns (2) to (4) inclusive and is the remaining cost of the compressor plants and the total costs of the wet gas gathering lines being the estimated costs to gather and compress wet gas.

Column

(6) Less: Proportion applicable to Royalite Gasoline Plant

This column sets forth the estimated proportion of the total wet gas gathering and compression costs contained in Column (5) which are applicable to the Royalite Gasoline Plant and represent that plant's share of the total gathering and compressing costs.

(7) Net Operating Costs

This column is the result of Column (5) less Column (6).

In the extreme right-hand column of these Schedules M-12-B are set forth particulars of the percentages of Column (5) applied to determine the amount set forth in Column (6). The percentages in respect of the compressor plants are as determined under Item (5) of Schedule M-12-D, Page 2, and the percentages in respect of the wet gas gathering lines are as determined under Item (7), Schedule M-12-D, Page 2.

(Go to page 2103)

SCHEDULE M-12-C

DISTRIBUTION OF COMPRESSOR PLANT COSTS

The first part of this Schedule M-12-C sets forth the distribution of the No. I Main Compressor Plant costs between wet gas and residue gas storage operations. For the purpose of computing in advance the estimated proportion of thetotal costs of the No. I Main Compressor Plant which are chargeable to the residue gas storage operation, it has been necessary to arrive at a percentage distribution based on the estimated horsepower requirements involved in the wet gas and residue gas storage operations. In actual practice, it is anticipated that certain actual costs identifiable directly with the individual compressors involved in each operation may be determined under accounting cost procedure, and that such specific costs as lubricating oil, engine repairs, power and steam, etc., may be determined, and that general costs such as operators, oilers, building repairs, lighting, etc. will have to be distributed to the respective operations conducted at this plant on a horsepower utilized basis. For the time being, however, it is believed that the horsepower requirement percentages are a reasonably accurate estimate of the proportions of the total costs which pertain to each of the wet gas and residue gas functions.

The foregoing general remarks are also applicable to the No.3 South Compressor Plant in determining the distribution of the costs of that plant between wet gas and residue gas (G.O.P.) operations.

The results obtained by applying the percentages of estimated horsepower requirements in these two compressor plants are then transferred to Columns (3) and (4) respectively of Schedules M-12-B.

SCHEDULE M-12-D
Page 1)

DISTRIBUTION OF WET GAS GATHERING AND COMPRESSION COSTS TO ROYALITE GASOLINE PLANT

This statement is intended to set forth the manner in which the proportion of the total wet gas gathering and compression costs attributable to Royalite Gasoline Plant have been computed.

Column — Explanation

The left-hand column identifies the compressor and gathering systems included in this Schedule M-12-D. Also set forth in this column are particulars of the estimated percentage of wet gas compressed and gathered which is utilized by the Royalite Gasoline Plant in its processing operations.

Schedule — This column identifies the source of the costs herein contained from the "A" Group of schedules in Madison Report M-9,

(1) to (4) This group of columns sets forth the total costs of the No. L Main Compressor Plant and the No.3 South Compressor Plant, from which totals have then been subtracted the amounts applicable to repressure system and residue system, respectively as determined in accordance with Schedule M-12-C.

(5)to (9) This group of columns sets forth the net wet gas compression costs of the compressor plants carried forward from columns (1) to (4) inclusive to which have been added the total wet gas gathering costs from the three wet gas gathering systems.

The line headed "Total Cost of Gathering and Compressing Wet Gas" sets forth the sums of Columns (5) to (9) inclusive.

The estimated volumes of wet gas compressed at the No.I Main Compressor Plant are as set forth in the line entitled "Volume of Wet Gas Compressed at No. I Main Compressor Plant".

The line entitled "Cost per m.c.f." is the result of a division of the volume of wet gas compressed into the total cost of gathering and compressing.

Column The volumes set forth against the "Estimated Percentage of Wet Gas Processed" is the result of the application of an estimated total percentage of 9.54% to the total of the estimated volume of wet gas compressed at that plant.

The line entitled "Total Wet Gas Gathering and Compression Costs chargeable to No.I Gasoline Plant" is the amount determined by applying the volumes utilized by the No.I Gasoline Plant to the cost per m.c.f. determined above.

(10) Total 1944 to 1948

This column is the sum of Columns (5) to (9) inclusive.

It will be observed that the estimated average cost per m.c.f. for the period 1944 to 1948 of wet gas processed and gathered at No.1 Main Compressor Plant is 2.954298¢ per m.c.f. as set forth in Column (10) of this schedule. It is suggested that this estimated cost, for the purpose of arriving at the proportion to be paid by the Royalite Gasoline Plant, be established for the time being at an even approximation of three cents per thousand cubic feet and the summary table at the foot of this Schedule M-12-D sets forth the application of the suggested three cents per thousand cubic feet between wet gas compression costs and wet gas gathering costs.

The following table will demonstrate the manner in which the division of the suggested three cent rate between compression and gathering is determined.

		Average cost per m.c.f.	% of Total
No.1 Compressor costs	$698,490.42		
No.3 Compressor costs	478,764.43		
Total Wet Gas Compression costs	1,177,254.85	1.477312¢	50.00553%
South Low Pressure (Wet) Lines	159,267.88		
South High Pressure (Wet) Lines	446,042.41		
North High Pressure (Wet) Line	571,684.17		
	$1,176,994.46	1. 76986¢	49.99447%
Grand Total:	2,354,249.31	2.954298¢	100.00000%

The costs applying to the No.1 Compressor Plant was $698,490.42, to which was added the No.3 Compressor costs $478,764.43, or a total wet gas compression costs of $1,177,254.85, and carrying into column two we find the average costs m.c.f. is 1.477312¢ or 50.00553% of the total.

Then we find that the South Low Pressure wet line costs would be $159,267.88; with South High pressure wet line $446,042.41 and the North High pressure wet line $571,684.17, or a grand total for wet gas gathering lines of $1,176,994.46, which is estimated to be 1.476986¢ per m.c.f. or 49.99447% of the total.

It will be observed that those two percentages are approximately fifty-fifty.

From the foregoing table, it will be observed that the division of estimated costs between compression and gathering is very close to 50%, respectively. It is therefore suggested that the rate of three cents per thousand cubic feet be applied in the same proportions, or, say, 1-1/2¢ per thousand cubic feet for compression and 1-1/2¢ per thousand cubic feet for gathering.

The aforesaid suggested rates are then applied to the proportion of the wet gas volume gathered and compressed for

account of the Royalite Gasoline Plant in the summary section for the respective years 1944 to 1948 inclusive.

SCHEDULE M-12-D
Page 2)

STATEMENT TO DETERMINE PERCENTAGES OF WET GAS GATHERING AND COMPRESSION COSTS APPLICABLE TO ROYALITE GASOLINE PLANT.

The purpose of this statement is to apply the suggested proportionate costs chargeable to Royalite Gasoline Plant as determined in the summary at the foot of Schedule M-12-D, Page 1, to the respective compression and gathering systems.

It is believed that this Schedule M-12-D, Page 2, is self-explanatory, and it is only necessary to point out that the percentages of total costs determined in Items (5) and (7) relative to compression and gathering costs, respectively, are then applied to the amounts set forth in Column (5) of Schedules M-12-B to determine the amounts set forth in Column (6) of the Schedules M-12/B.

I do not think that I have any further observations to make on these statements at this time.

Turning now to Exhibit 82, which is entitled "Scrubbing Costs" for the years 1944 to 1948.

MADISON NATURAL GAS COMPANY LIMITED

EXPLANATION OF SCHEDULE M-13

INTRODUCTION:

The following comments are intended to explain Schedule M-13, being summary of estimated scrubbing costs for the years 1944 to 1948 inclusive.

Column:	Explanation:
(Particulars)	The extreme left-hand column of this schedule sets forth the nature of the total expenses and the plants to which the total expenses are attributable;

namely, Seaboard and Girbotol.

Schedules — This column identifies the source from which the dollar amounts contained in this schedule were taken from schedules M-9-A.

(1) to (5) — These columns set forth by years the totals carried forward from the aforementioned Schedules M-9-A.

(6) — This column represents the sum of Columns (1) to (5) Inclusive.

(7) — This column is the average of the totals contained in Column (6).

Under Items (a) and (b) are set forth the total estimated gas scrubbed with the equivalent cost per m.c.f. and the total estimated scrubbed gas sales in m.c.f. with the relative costs per m.c.f. respectively.

Q MR. CHAMBERS: Have you any special comment on that?

A No Sir, I have not at this time.

Turning now to Exhibit 83 which is entitled "Estimated costs of transmission and compression of residue gas from Gas & Oil Products Plant", 1944 to 1948. Now that is based, the cover of that statement is marked "1944" but it should be "1945" as previously explained. There was no operation in the year 1944 although a small amount of depreciation was incurred.

MADISON NATURAL GAS COMPANY LIMITED

EXPLANATION OF SCHEDULE M-14

INTRODUCTION:

This schedule is intended to set forth the total estimated cost of gathering and transmitting residue gas handled through Madison's South Residue system. This system comprises the

suction line from Gas and Oil Products Plant to Madison's No.3 South Compressor Plant and a discharge line thence to the town of Hartell where junction is made with the British American Gas Utilities residue gas line from the British American Gasoline plant to the scrubbing plants.

Column	Explanation
Particulars	This column identifies the nature of the costs herein contained.
Schedules	This column sets forth the respective columns of the "A" Group of schedules in Madison's report M-9 from which the costs herein contained were transferred.
No.3 Compressor Plant.	All costs contained in the columns headed "Total Estimated Costs of No.3 South Compressor Plant" for the years 1945 to 1948 inclusive represent the total cost of operating this plant during the years in which residue gas will be handled from the Gas and Oil Products Plant. The amounts contained in this group represent the total cost of operating the No.3 South Compressor Plant, which plant comprises both wet gas and dry gas operations.
Proportion applicable to residue gas operations	That is a series of columns. The costs contained in this group for the years 1944 to 1948 inclusive represent that proportion of the total cost of the No.3 South Compressor Plant which it is estimated applies to the residue gas operation at that point. The estimated amounts contained in this group up to and including the totals identified as "Proportion of No.3 Compressor applicable to Residue Gas Operations" were determined in the manner set forth in schedule. M-12-C. Reference to Schedule M-12-C

will demonstrate that the distribution of the total costs of the No.3 South Compressor Plant was made on an estimated horsepower requirement basis.

The amounts set forth in this group and identified as "Gross Operating Costs- South Residue Line" for the years 1944 to 1948 inclusive represent the entire cost of operating the suction and discharge lines and are carried forward from the "A" Group of Schedules in Madison Report M-9.

The British American transmission charge is also carried forward from the same "A" Group of schedules and the "Total South Residue System Costs" as set forth will be found in agreement with the totals on the respective "A" Group of Madison Report M-9.

The estimated volumes to be handled through the South Residue System are as set forth for the respective years 1945 to 1948 inclusive, and the "Estimated Cost per m.c.f. per Year" is the result of a division of the estimated volumes to be handled into the total South Residue System costs.

The estimated results of the operation for the period 1945 to 1948 inclusive are then summarized at the foot of Schedule M-14 to determine the average cost per thousand cubic feet of residue natural gas handled.

I do not think I have any special remarks to make on that, Mr. Chambers

Q MR. CHAMBERS: Now Mr. Kirkpatrick, we had better deal with Exhibit 78 that we put in, which has to do with this, that is the information furnished in response to Mr. Fenerty's request?

A Yes, that is right. I think perhaps in dealing with this Exhibit 78, if you will refer please to exhibit 76.

Exhibit 76 is the Madison Natural Gas Company Limited balance sheet for the year ending December 31st, 1944, and the statement of earned surplus, profit and loss, for the same period and at Mr. Fenerty's request as set forth in Volume 25, page 2015, we were asked to submit the following information. First, a reconciliation of fixed capital assetsper Exhibit 59, which you will recall was Mr. Hill's first appraisal report, to the capital assets at December 31st per Exhibit 76.

At the top of this page we start off then with the capital assets, the reproduction costs now per Mr. Hill's Exhibit 59, page 22. This is gross cost incidentally $2,568,216. Then from that we had to deduct an adjustment in respect of the Girbotol prepaid royalty and you will recall that during Mr. Hill's evidence he stated that an error in the net valuation of this Girbotol prepaid royalty had been drawn to his attention. We had actually discovered this error prior to the closing of the books for the calendar year 1944 and we therefore gave effect to it, although Mr. Hill was not able to similarly correct his until a later date. I think that little table explains it per Exhibit 59, page 54. Mr. Hill had originally valued the royalty at $27,500. That is the gross figure.

Now to that we have the general overhead which Mr. Hill has applied to all assets. That happens to be 9.002103 percent as opposed to the generally accepted 9 cent rate. We add that to the gross value which gives us $29,975.58 which is the amount Mr. Hill had in his original valuation.

Now we determine that the proper value on January 1st 1944 as Royalite had it was $19,725.84 and that figure incidentally is without regard to any 9 cent overhead for the

reason we were somewhat at a loss to know whether Mr. Hill had intended to include the overhead figure in his over-all appraisal valuation. Subsequently he stated he thought that his 9 cent was not identified with specific assets but with total over-all cost of reproducing the property in a space of one year.

This adjustment then is the difference in royalty net value and the value Mr. Hill has adjusted to $10,249.74 which deducted from $2,568,216. gives us the reproduction cost new as of January 1st 1944, which was booked by Madison. Now I say booked by Madison, we were hopeful at one time that the final rate-base might have been determined prior to the close of the fiscal year 1944. When it became apparent we were not going to be able to have that figure at that time, it became necessary to book something so we adopted Mr. Hill with this adjustment we have just mentioned.

Then to that figure we then add the actual 1944 additions, Exhibit 74, which is our Schedule M-7, column 7 sets forth the actual addition as $359,523. That then gives us the total capital assets including the prepaid royalty on the Company's books as at December 31st, 1944 for a combined total of $2,917,489.26.

Now if you will refer please for a moment to Exhibit 76, the first page of the balance sheet, it will be observed there is an item there entitled, Deferred and Prepaid Charges $28,414.40. Of that sum $19,725.84 is the above mentioned Girbotol royalty. Then we find again on Exhibit 76 that the gross valuation and capital assets is $2,897,763.42. The combination then of the Girbotol royalty and the fixed capital

assets reconciled to the total capital assets including pre-paid royalty set up on Madison's books at that date.

Now those figures are all gross.

Q THE CHAIRMAN: I did not get that quite clear, your figure of $2,897,763.42 plus the royalty as prepaid royalty as appearing in your books giving you the figure of $2,917,000.

A Yes sir, you see we had to start off with Mr. Hill's figures and bring it down to a reconcilable total and the combination of those two are set forth.

Q MR. CHAMBERS: That is the figures on the property ?

A That is the gross value. Those figures of course are tentative. They are subject to Mr. Hill's submission, Exhibit 60, and such other adjustments as may be found in the final rate-base.

Now turning to the next page which is an analysis of the reserve for depreciation and reserve for amortization per Exhibit 76, we find that Mr. Hill's Exhibit 59, page 22, is reproduction cost new less depreciation was $2,097,704.00, and we again prior to Mr. Hill's return to Calgary effected the adjustment of $7,851.09 set forth in this little schedule which is the net value adjustment relative to the gross value adjustment shown on previous page. That then gave us an adjusted reproduction cost less the depreciation at January 1st, 1944 of $2,089,852.91. Then we carried the gross reproduction cost of $2,557,966.26 from the first page and the deduction of one from the other then gives us the total difference or the depreciation reserve booked as at January 1st, 1944, in an amount of $468,113.35.

We then add to that figure the depreciation booked in respect of the year 1944. The depreciation on plant and equipment under the unit of production method amounted to $97,424.39,

and the percentage is shown in the bracketted figure. Then the plant and equipment subject to the straight line application, that is office equipment, transportation equipment, $4,600.14, or a total of $102,024.53, to which we have then added the amortization on the lands and easements, also using the unit of production percentage and as this gave us a total of $197.59 or a combined depreciation amortization provision for the year of $102,222.12, which will be found in agreement with amortization and depreciation as set forth on the profit and loss statement contained in Exhibit 76.

The total then of the opening reserve plus the 1944 provision gave us the total reserve at December 31st, 1944 per Exhibit 76 of $570,335.47 and as a matter of interest we also inserted a little table at the bottom of this page to demonstrate the calculation to establish the unit method rate for 1944. We had no information, no firm information, as to what the final marketable reserves were likely to be at that time and we took a tentative estimate reserve as of January 1st, 1944, of 353 million cubic feet and our sales and scrubbed residue gas for the year 1944 were 15,458,237 m.c.f. which gives the percentage of 4.37910396 percent.

Mr. Fenerty also requested particulars of the gas sales revenue for the year 1944, and that information is set forth in the third page of Exhibit 78. I think that information is self-explanatory. The first column indicates the purchasing company, the second column indicates the volume which they have purchased in the year 1944, and the third column sets forth the unit price at which the gas was sold and the fourth column the resulting profit in columns 2 and 3.

As a foot note we have inserted there an explanation of the odd figure which appears in respect of Valley Gas Company Limited. Their unit price per m.c.f. is shown as 3.14374 cents and that is strictly speaking a weighted average price determined by dividing the total revenue from that company into the total volume which was metered to them. A little table will show that seven and three quarter cents m.c.f. was paid for on the metered consumption at the point of consumption and that 25% of the flat rate charges made by the Valley Gas Company to its consumers forms a part of the total amount paid to Madison and also the sum of $15.00 per well is included in respect to some months of 1944. I believe those wells now are disconnected but I am not certain of that and we added a further little table here. We had no place else to put it and that is the reason it is on that statement. Disposition of total sales income. It will be observed the total sales $1,101,908.92, as set forth above in this page is broken down in two items, gas purchases of $320,743.19 and the remainder $781,165.73 is applied in respect of operating expense depreciation and returns and that figure, that last mentioned figure is more fully explained on a later page which we will come to.

The next page sets forth the unit costs actually for the year 1944 including depreciation return and administration and you will note again there is $781,165.73 depreciation in terms of functional operation, namely gathering, compression, scrubbing south residue system and repressuring.

I would like to just mention this south residue system and repressuring. They will crop up quite frequently

in a review of the 1944 costs and I think this is probably a good point at which to explain what is meant.

As you know the south residue and repressuring system did not actually operate in the calendar year 1944, as during that year no actual operating costs were incurred but under the proposed plan for depreciating the current capital additions in the calendar year on the basis they were installed on June 30th, these two systems were charged with a proportion of depreciation and also the relative return on the gross investment on the basis of one half year.

Now that seems peculiar, but in order to follow the general principle laid down that would be the situation in any department. It was shown that these two systems did not function in an operating expense and therefore we find the peculiar result of $4,600 odd being shown as the cost of the south residue system and $1,199.90 as the cost of the re-pressure system. For practical purposes we could just as easily have deemed that as a deferred charge and so treated it in the Company's account and reapplied it in subsequent periods. However, considering that it was a very insignificant percentage of the grand total we preferred to carry on and treat it the same as any other additions to capital investment during the calendar year 1944.

Now the figures which are set forth under the column headed, Net Cost per Schedule M-9-A-44 will be found to have been lifted from the statement we are now turning to M-9-A, that should be marked Schedule M-9-A-44 actually.

I believe that it might be helpful if you will turn just for a moment to Exhibit 79, M-9-A-44.

Q MR. CHAMBERS: That is the first figure ?

A That is right, M-9-A-44, which represents our estimated cost and the Exhibit we have just filed, the statement we have just filed as part of Exhibit 78 is essentially a comparison of the estimated cost to the actual cost.

(Go to Page 2118)

And the same general form has been followed in setting up this statement for actual for 1944, as we felt that that was possibly the best way in which an intelligent comparison might be made. The principal differences between the actual statement and the estimated statement will be found in the contingencies account. The $20,000.00 is, of course, not similar to the actuals because we are now dealing with the actual facts.

Looking at Column 1 in the estimated figures under the Total Functional Operating Departments it is noted that we have originally an item of some $354,431.00 of direct expenses, against which are actual direct expenses as computed or as known to be of three hundred and seventy-two thousand odd dollars, so that the twenty thousand dollar contingency fund that we have here in our estimated costs was found to be necessary for that year. I do not know that there are any other important differences between the estimated statement and the actual statement, except to say this perhaps, that the estimated statement of course was computed on the basis of 9½% net while the actual position was 7.046% net for the year 1944.

On the whole, looking at the net operating costs, which are carried out to the extreme right hand column, our estimate of all kinds of expenses was $784,406.58 as against an actual picture of $781,165.73. Now there is one more departure in our actual statement from the estimated. In our actual statements we assumed, or had the theory at least, that it would be possible for the company to so estimate its services, its surface plant cost, that the last dollar of cost would be distributed externally and internally. That, of course, is obviously impossible in actual practice. When you

have made your estimate here of Steam costs or Electric costs during the course of a year, you cannot make those estimates so accurate that you will not be left with a small deficiency or excess of earnings, and in actual practice we find, if you will look at the column headed "Sub-Total", under "Service Department", there are small excesses and deficiencies of funds which for practical purposes we absorb internally in our own operations. The net total of those debits and credits is some $8700.00, and they were redistributed on the basis of the services which each of those functional plants enjoyed. Those deficiencies and excesses of earnings are actually considered in determining each subsequent year's estimated costs.

For example, we find that the Boiler Plant had a shortage of $3,549.05, which is something less than 5% of the total cost. Now in determining or in computing the estimated costs of Steam both within our system and externally for the year 1945, the first cost we start off with is this deficiency from the pre ious year. So that in effect over a long period of time the maximum amount of deficiency or excess will be limited to one year.

I think, sir, that that is probably all the comments I have to make. Oh, I beg your pardon. There is one more schedule I had overlooked here. This last statement is a computation to determine the rate of return(actual) for the year 1944, and if you will just recall that in reading our submissions relative to depreciation and return on capital employed, we stated that we felt that a fair principle to employ for depreciation purposes is the opening depreciation plus 50% of the current year's additions, and we also stated therein that we felt that a fair way in which to determine the rate of return was to take the opening net shown at the

beginning of the year, and 50% of the current year's additions, and deduct 50% of the current Year's depreciation to arrive at the rate base or rateable base at the end of each year. Now that formula has been employed in this table which we are looking at now.

We start off with the reproduction costs, new, January 1st, 1944, as booked by Madison, and I believe that will be found in agreement with the statements previously reviewed. From that we first deduct the depreciation reserve booked as at January 1st, 1944. That is the opening reserve which gives us the net fixed capital assets at the beginning of business on January 1st, 1944. To that then, we add the working capital estimate of $190,000.00, and we also add 50% of the 1944 capital additions, which brings us down to a total of $2,459,614.41. Then we deduct therefrom the 50% of the depreciation on the physical plant and equipment of $51,111.06, and we also deduct 50% of the 1944 Girbotol royalty amortization. This deduction then brings us to the point of the capital employed in fixed capital assets of $2,406,497.31, to which is added the going value of $200,000.00, which brings us down to a new total of capital employed of $2,606,497.31. Just below that figure then we carry forward the net profit for the year 1944, from Exhibit 76, and we carry forward the provision for taxes on profits, the combined total of which gives us the gross profit for the year 1944, before taxes, of $346,838.20. And I think the little table at the bottom is self-explanatory. We carried the total capital employed down from the figure above, and then we have the net profit after taxes, which constitutes then the net rate of return

for the year 1944, of 7.046%.

Q MR. CHAMBERS: Mr. Kirkpatrick, there was one other matter that I wanted to allude to. In your evidence prior to today you dealt with capital additions made by Madison and I think referred to the capital additions in the North end of Turner Valley that were made last year. In connection with those there was an agreement made between Home and Madison?

A Yes.

Q Have you got copies of those?

A Yes sir.

Q I would like to see those.

A These are the agreements.

THE CHAIRMAN: That will be Exhibit 84.

AGREEMENT BETWEEN HOME OIL CO. LTD. AND MADISON NATURAL GAS CO. LTD. re EXTENSION GAS GATHERING SYSTEM AND RELATIVE EQUIPMENT NOW MARKED EXHIBIT 84.

Q MR. CHAMBERS: Would you just tell us briefly what this is? I do not propose to have it read unless the Board desires it?

A This is an agreement entered into between Home Oil Company Limited and Madison Natural Gas Company Limited, covering the extension of gas to the gas gathering system and relative equipment for gathering gas in the Home area, the expenditures in connection with which are more fully set forth in our M-7. I think perhaps the agreement itself is self-explanatory. Attached to itare schedules. Schedule "A" is a list of the material required to extend the gas gathering line itself. Schedule "A" is just simply a map which outlines in red the additional lines under this contract. Schedule "B" sets

forth in some detail the compressor equipment purchased and other equipment necessary for the extension of the compressor building, at Compressor Station No. 1. Schedule "C" sets forth the equipment necessary to convert one of the 600 horse-power compressor units at No. 1 plant for the purpose of re-pressuring gas. Schedule "D" lists wells or existing wells which are to deliver gas to Madison Gas gathering system under this extension agreement. Schedule "E" sets forth the existing wells excluded from this agreement due to insufficient pressure for delivery into the Madison's gas gathering system.

Q If the Board please, I think that is all the evidence on the examination in chief. By the way, Mr. Kirkpatrick, this agreement has been actually executed?

A Oh yes, sir.

Q This copy does not indicate that.

THE CHAIRMAN: It has been filed with the Board.

MR. CHAMBERS: Yes.

THE CHAIRMAN: Does anyone desire to commence cross-examination of Mr. Kirkpatrick now?

MR. FENERTY: I have been commencing but I will cheerfully waive that privilege to any of the others that are ready. I quite frankly feel I have to discuss some items with Mr. Morrison, and I think perhaps I can shorten my examination by at least the twenty minutes between now and one o'clock by consulting with Mr. Morrison before embarking on it.

THE CHAIRMAN: I think that is possibly true of all counsel.

MR. STEER: It is in my case, sir.

THE CHAIRMAN: I think perhaps we will not ask anyone to start today when so little can be accomplished. We will adjourn until 9.30 in the morning.

(The Hearing was then adjourned until 9.30 A.M., June 20th, 1945).